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PATENT COOPERATION TREA

From the INTERNATIONAL BUREAU

# PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
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in its capacity as elected Office

| | |
|---|---|
| **Date of mailing** (day/month/year)<br>28 May 2001 (28.05.01) | |
| **International application No.**<br>PCT/DK00/00542 | **Applicant's or agent's file reference**<br>P9737PC00/LN/dh |
| **International filing date** (day/month/year)<br>29 September 2000 (29.09.00) | **Priority date** (day/month/year)<br>01 October 1999 (01.10.99) |
| **Applicant**<br>CHRISTIANSEN, Henrik | |

1. The designated Office is hereby notified of its election made:

   [X] in the demand filed with the International Preliminary Examining Authority on:

   12 April 2001 (12.04.01)

   [ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

   [ ] was not

   made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|---|
| **The International Bureau of WIPO**<br>**34, chemin des Colombettes**<br>**1211 Geneva 20, Switzerland** | Authorized officer<br>J. Leitao |
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |

# PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

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International Application No. PCT/DK 00/00542

International Filing Date 29 SEPTEMBER 2000

Danish Patent and Trademark Office
PCT-International Application

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference *(if desired) (12 characters maximum)* P9737PC00/LN/dh

**Box No. I TITLE OF INVENTION**

Method of operation of a printing unit and printing unit for offset machine

**Box No. II APPLICANT**

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

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Teleprinter No.

State *(that is, country)* of nationality: DK

State *(that is, country)* of residence: DK

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

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This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only *(If this check-box is marked, do not fill in below.)*

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State *(that is, country)* of residence: DK

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

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**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) *(mark the applicable check-boxes; at least one must be marked)*:

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- ☒ **EA** **Eurasian Patent:** **AM** Armenia, **AZ** Azerbaijan, **BY** Belarus, **KG** Kyrgyzstan, **KZ** Kazakhstan, **MD** Republic of Moldova, **RU** Russian Federation, **TJ** Tajikistan, **TM** Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** **European Patent:** **AT** Austria, **BE** Belgium, **CH and LI** Switzerland and Liechtenstein, **CY** Cyprus, **DE** Germany, **DK** Denmark, **ES** Spain, **FI** Finland, **FR** France, **GB** United Kingdom, **GR** Greece, **IE** Ireland, **IT** Italy, **LU** Luxembourg, **MC** Monaco, **NL** Netherlands, **PT** Portugal, **SE** Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** **OAPI Patent:** **BF** Burkina Faso, **BJ** Benin, **CF** Central African Republic, **CG** Congo, **CI** Côte d'Ivoire, **CM** Cameroon, **GA** Gabon, **GN** Guinea, **GW** Guinea-Bissau, **ML** Mali, **MR** Mauritania, **NE** Niger, **SN** Senegal, **TD** Chad, **TG** Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT *(if other kind of protection or treatment desired, specify on dotted line)* .....

**National Patent** *(if other kind of protection or treatment desired, specify on dotted line)*:

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- ☒ **AM** Armenia .....
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Check-box reserved for designating States which have become party to the PCT after issuance of this sheet:

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**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)*

**Box No. VI PRIORITY CLAIM** ☐ Further priority claims are indicated in the Supplemental Box.

| Filing date of earlier application (day/month/year) | Number of earlier application | Where earlier application is: national application: country | regional application:* regional Office | international application: receiving Office |
|---|---|---|---|---|
| item (1) (01.10.1999) October 1, 1999 | PA 1999 01408 | DK | | |
| item (2) | | | | |
| item (3) | | | | |

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office)* identified above as item(s): (1)

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**Box No. VII INTERNATIONAL SEARCHING AUTHORITY**

**Choice of International Searching Authority (ISA)** *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used)*: ISA / SE

**Request to use results of earlier search; reference to that search** *(if an earlier search has been carried out by or requested from the International Searching Authority)*:

Date *(day/month/year)* Number Country *(or regional Office)*

**Box No. VIII CHECK LIST; LANGUAGE OF FILING**

This international application contains the following **number of sheets**:

| | | |
|---|---|---|
| request | : | 3 |
| description (excluding sequence listing part) | : | 8 |
| claims | : | 2 |
| abstract | : | 1 |
| drawings | : | 5 |
| sequence listing part of description | : | |
| **Total number of sheets** | : | 19 |

This international application is **accompanied by** the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other *(specify)*:

**Figure of the drawings** which should accompany the abstract: 1, 3, 4

**Language of filing** of the international application: Danish

**Box No. IX SIGNATURE OF APPLICANT OR AGENT**

*Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).*

Aarhus C, September 29, 2000

Dorthe Holste

PATRADE A/S
Dorthe Holste (secretary)

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1. Date of actual receipt of the purported international application: RO/DK 29 SEPTEMBER 2000 (29.09.2000)
2. Drawings: ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:
4. Date of timely receipt of the required corrections under PCT Article 11(2):
5. International Searching Authority (if two or more are competent): ISA / SE
6. ☐ Transmittal of search copy delayed until search fee is paid.

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Date of receipt of the record copy by the International Bureau: 11 OCTOBER 2000 (11.10.00)

# FREMGANGSMÅDE TIL DRIFT AF ET TRYKVÆRK SAMT TRYKVÆRK TIL OFFSETMASKINE

## Opfindelsens baggrund

Den foreliggende opfindelse angår en fremgangsmåde til drift af et trykværk, hvorhos trykværket omfatter en kammerrakel, der anvendes til lakpåføring og som fugteværk til vandpåføring, og hvor lakpåføringsorganerne og vandpåføringsorganerne udgøres af en enhed, der omfatter en kammerrakel samt i det mindste en valse til overføring af lak eller vand fra kammerraklen.

Offsetmaskiner er velkendte inden for faget og vil derfor kun blive beskrevet kort. En bane eller et ark, hvorpå der skal trykkes, føres omkring modtrykvalser eller overføringsvalser. Banen eller arkene bringes i anlæg mod en blanket cylinder for at få påført det tryk, som skal påføres i det enkelte trykværk i offsetmaskinen. Blanketcylinderen er i kontakt med en platecylinder, som overfører det farvetryk, som skal placeres på banen. Platecylinderen er i kontakt med fugteværk samt et farveværk, som påfører vand henholdsvis farve. Således vil en offsetplade på platecylinderen roteres, hvorved vandmodtagende dele fugtes af fugteværkets valser. Derefter vil de farvemodtagelige dele af offsetpladen forsynes med farve fra farvevalserne i farveværket. Det dannede trykbillede afsættes derefter på blanketcylinderen, der videretrykker farven på banen eller arket. Der vil fortrinsvis være tale om en papirbane, men der kan også trykkes på andre materialer.

Et trykværk ifølge den foreliggende opfindelse kan anvendes i en traditionel offsetmaskine, for eksempel af den type, der er beskrevet i europæisk patentansøgning nr. 767.058. Indholdet af denne patentansøgning er herved inkorporeret ved reference, idet trykværket kan være en del af en offsetmaskine, som er opbygget efter samme princip og med samme papirafgivnings- og papirmodtagningsorganer ved begyndelsen og slutningen af trykværket, ligesom der kan anvendes tilsvarende organer til overføring af papirbane eller enkeltark imellem forskellige trykværker, der placeres i rækkefølge for at bibringe banen det færdige tryk. Der vil ligeledes kunne anvendes samme

type trykfarver. Offsetmaskiner kan være udrustet med et lakværk. Lakværket vil typisk være opbygget med en cylinder, hvorpå lakken bliver påført fra et valsearrangement, der forsynes fra et kar med klar lak.

I international patentansøgning PCT/DK98/00303 er der beskrevet et system af den indledningsvis nævnte type, som er forbedret og derved muliggør en bredere anvendelse og mere effektiv drift af trykværker i offsetmaskiner, hvor trykværket kan anvendes til lak og vandpåføring. I dette system etableres lakpåføringen indirekte via platecylinderen. Det er dog ønskeligt at kunne påføre lak direkte på blanketcylinderen af hensyn til kvalitet og finhed i det dannede tryk.

Det er formålet med den foreliggende opfindelse at anvise en fremgangsmåde til drift af et trykværk samt et trykværk til en offsetmaskine, som muliggør en bredere anvendelse og en mere effektiv drift af trykværker i eksisterende og nye offsetmaskiner. Det er endvidere et formål at anvise et fugteværk, der samtidig kan benyttes til lakpåføring, og som også muliggør flexotrykning i en offsetmaskine.

Ifølge den foreliggende opfindelse opnås dette med en fremgangsmåde, som er særpræget ved, at kammerrakelen og en samvirkende valse forskydes mellem en første position for overføring af vand via en platecylinder til en blanketcylinder og en anden position for overføring af lak direkte til blanketcylinderen.

Trykværket til brug ved fremgangsmåden er særpræget ved, at lak- og vandpåføringsenheden er indrettet forskydeligt mellem en første position for at bringe nævnte mindst ene valse i kontakt med en valse, der er i indgreb med platecylinderen, og en anden position for at bringe nævnte mindst ene valse i direkte kontakt med trykværkets blanketcylinder.

Ved at anvende en sådan fremgangsmåde og en sådan enhed bliver det muligt at fremstille offsetmaskiner, således at de får en bredere anvendelse, og samtidig kan processen køre mere effektivt, idet lakken ikke påføres indirekte via platecylinderen til

blanketcylinderen. Den forskydelige enhed kan udformes, så den kan eftermonteres på eksisterende offsetmaskiner.

Lak eller vand fra kammeret vil blive overført til blanketcylinderen eller platecylinderen via en valse, som fortrinsvis er en rastervalse i form af en Anilox-valse, og væsken, der ligger i rastervalsens kopper overføres til blanket- eller platecylinderen. Overføring af vand sker til platecylinderen, idet en gummivalse indskydes mellem rastervalsen og platecylinderens trykplade. Overføring af lak sker direkte til blanketcylinderen fra rastervalsen.

Når overføringsenheden er forskudt til sin anden position for kontakt med blanketvalsen, er det også muligt at køre en flexografisk trykning. Blanketcylinderen forsynes med en trykplade, og platecylinderen forskydes ud af kontakt med blanketcylinderen. Herefter kan flexofarver overføres fra kammeret og overføringsvalsen i form af en Aniloxvalse til trykpladen.

Hvis der ønskes et heldækkende tryk, kan der anvendes en dug på blanketcylinderen, ligesom det er tilfældet ved lakpåføring.

Det vil være muligt at anvende separate kammerrakler til farve/lakpåføring og vandpåføring. Imidlertid vil det også være muligt at anvende en og samme kammerrakel til lak- og vandpåføring.

I et lakværk, som typisk vil være det sidste trykværk i en offsetmaskine, er det fordelagtigt, at lakpåføringsorganerne kun omfatter én rastervalse, i form af en Anilox-valse, til overføring af lakken, som påføres direkte fra kammerraklen til blanketcylinderen.

De fleste maskiner vil være forsynet med en ramme med koblingsorganer til understøtning af et rengøringssystem bestående af en væskepåsprøjtningsdyse samt aftørringspapir. I nogle tilfælde kan trykværket ifølge opfindelsen blive monteret i denne rammes koblingsorganer. Herved undgås behov for speciel tilpasning af maskinens ramme. Herved bliver det særlig enkelt at modificere en bestående maskine, idet de

koblingsorganer, som befinder sig i offsetmaskinens ramme, genbruges som koblingsorganer for enheden ifølge opfindelsen.

Motoren, som benyttes til at trække rastervalsen, vil være selvstændig for at kunne tilpasse omdrejningstallet til forskellige offsetmaskiner. Enheden behøver således ikke en speciel tilpasning af rastervalsens træk til forskellige offsetmaskiner. I maskinen vil der kun være behov for et ophæng, som i sin mest simple form består af fire tappe eller skruer på et stativ.

Ved anvendelse af en enhed ifølge opfindelsen, der er baseret på en kammerrakel, vil det være muligt at påføre stærkt pigmenterede farver, som for eksempel metallakker. Dette vil ikke være muligt med almindelige offsettrykværker, idet pigmenter/farver her vil klumpe sammen og umuliggøre dannelsen af et kvalitetstryk.

Enheden ifølge opfindelsen kan også anvendes som et fugteværk. I de kendte fugteværker opstår der et miljøproblem. For at kunne overføre fugtevandet med det nuværende valsearrangement er det nødvendigt at tilsætte opløsningsmidler. Dette er på nuværende tidspunkt blevet forbudt flere steder.

Alternativt har man forsøgt at løse problemet ved teflonbelægning for at danne en slags maske med henblik på at undgå farveafsætning i visse områder. Dette er kendt som tøroffset og er en principiel forskellig proces. Man har således benyttet teflon til at erstatte vandpåføringen fra fugtevalserne. Dette system har en fordel, idet papiret ikke fugtes og derved opstår der ikke risiko for, at lak vedhæfter på dårlig måde.

I stedet for at anvende de traditionelle fugteværker kan der anvendes et system, der omfatter en kammerrakel samt en rastervalse samt en gummivalse imellem kammerraklen og platecylinderen således som beskrevet i ovennævnte internationale patentansøgning. Dette er fordelagtigt, idet man kan køre hurtigere end hidtil. Den vandmængde eller vandpølse, som dannes i et kileformet mellemrum mellem gummivalsen og platecylinderen, kan varieres ved at køre med varieret hastighed mellem gummivalsen og platecylinderen. Ved at køre med en større hastighed på gummivalsen er det såle-

des muligt at tilvejebringe en større vandmængde i kilen. Vandmængden kan tillige justeres ved at variere den spaltebredde, som optræder mellem gummivalsen og platecylinderen. Trykværket ifølge opfindelsen er således fordelagtig ved, at vandmængden, som befinder sig i spalten, kan varieres efter behov.

Idet et trykværk kan være beregnet til lak og til fugteværk, vil det være muligt at anvende samme enhed bestående af kammerrakel og overføringsvalse både til vand og til lak.

Ved anvendelse af et almindeligt fugteværk vil det ikke være muligt at påføre lak. På grund af overfladehastighederne vil der optræde stor og utilladelig forurening af omgivelserne, idet lak vil sprøjte ud fra valsens periferi samt ud fra enderne af valserne. Ved at anvende enheden ifølge opfindelsen til lakpåføring vil det være muligt at undgå forureninger.

Det vil også være muligt, at der sammen med en platecylinder og en blanketcylinder, er tilvejebragt to enheder ifølge opfindelsen, hvoraf den ene enhed benyttes til lakpåføring og den anden til vandpåføring. Herved vil det være muligt at tilvejebringe lakstriber og farvestriber side om side på platecylinderen. Dette er muliggjort, da kammerrakler kan opdeles for at afgive væske/farve over en del af deres længde. Herved opnås således mulighed for at lave tryk med helt nye effekter.

**Tegningsbeskrivelse**

Opfindelsen vil i det efterfølgende blive forklaret under henvisning til den medfølgende skematiske tegning, hvor

fig. 1 viser et sidebillede af en typisk offsetmaskine omfattende fire trykværker,

fig. 2 viser et partielt billede til illustration af et kendt trykværk, der omfatter et fugteværk samt et farveværk,

fig. 3 viser et billede svarende til fig. 2 til illustration af en udførelsesform for et trykværk ifølge ovennævnte internationale patentansøgning,

fig. 4 viser et billede svarende til fig. 3 til illustration af en første udførelsesform for et trykværk ifølge opfindelsen, og

fig. 5 viser et billede til illustration af en yderligere udførelsesform for et trykværk ifølge opfindelsen.

Fig. 1 viser en traditionel offsettrykkemaskine 1, som omfatter fire trykværker 2. Maskinen har en transportretning 3 for ark, som trykkes. Arkene kommer fra en afgivningsstation 4 og føres til en modtagestation 5 ved hjælp af et afgivningsarrangement 6, som omfatter et transportbånd 7. Transportbåndet 7 løber omkring to kædehjul 8,9. De enkelte ark føres fra enheden 4 via en bane 10 omkring en impressionscylinder eller modtrykscylinder 12. De enkelte ark placeres ved en position, som er indikeret ved 13. Arkene er således placeret i et område mellem en blanket cylinder 14 og impressionscylinderen 12. Blanket cylinderen 14 er i kontakt med en platecylinder 15. Udover impressionscylindrene 12 omfatter offsetmaskinen også overføringscylindre 16 for arkene.

Offsetmaskinen omfatter endvidere gribeorganer til fastholdelse af ark samt en lang række valser til fugteværker og farveværker, som er i forbindelse med platecylinderen. Da disse er velkendte, er de ikke vist i fig. 1, der tjener til illustration af offsetværkets opbygning. Disse valser fremgår derimod af fig. 2.

Fig. 2 viser et trykværk 1, som omfatter en impressioncylinder 12, en blanket cylinder 14 og en platecylinder 15. Disse cylindre roterer ifølge pilene 17,18,19. Et fugteværk omfatter en beholder 21 for vand. Fra vandbeholderen 21 føres vandet via et system af valser 22 til den sidste kontaktvalse 23, som er i anlæg mod platecylinderen 15. Trykværket 1 omfatter endvidere et farveværk 24, der omfatter et antal valser 25, som overfører farve fra en farvebeholder 26 til kontaktvalser 27, som påfører farven på en blød trykplade (ikke vist), som befinder sig på platecylinderen 15. Den trykplade, som befinder sig på platecylinderen, vil således blive bibragt farve i de områder, hvor der ikke er påført vand fra fugteværket 20. Trykpladen vil almindeligvis være en ætset metalplade.

Da et lakværk i princippet er opbygget som fugteværket 20, kan fig. 2 også siges at illustrere et lakværk. Lakken vil således føres op fra beholderen 21, som indeholder lak, og overføres via valser 22 til den sidste kontaktvalse 23, der også kaldes formevalsen. Imidlertid vil et lakværk fortrinsvis være monteret på blanketcylinderen 14 for at undgå uønsket tilsmudsning.

Den viste udformning har nogle miljømæssige samt tryktekniske ulemper. I stedet for at anvende det bestående fugteværk kan det i fig. 2 viste trykværk modificeres, således som illustreret i fig. 3.

I fig. 3 er kontaktvalsen 23 erstattet af en enhed 28, som omfatter et kammerrakelsystem 30 og en rastervalse 29, fortrinsvis en Aniloxvalse, af den type, som også anvendes til flexografisk trykning. Rastervalsen 29 kan monteres direkte i det bestående ophæng. Imellem rastervalsen 29 og platecylinderen 15 er der monteret en blød valse 32, fortrinsvis en gummivalse. Enheden 28 kan selv ved store periferihastigheder sikre en konstant og ens mængde vand og/eller lak overført til platecylinderen 15. Såfremt man ønsker at anvende enheden 28 til lakpåføring, bringes farveværkets valser 27 ud af kontakt med platecylinderen 15. Såfremt enheden 28 benyttes til vandpåføring bibeholdes farveværket 24 indkoblet med platecylinderen 15.

Den udførelsesform, der er vist i fig. 3, kan ændres, når den alene benyttes til lakpåføring. Således kan den hårde rastervalse 29, uden en blød valse, anvendes direkte til lakpåføring. Dette vil dog nødvendiggøre anvendelsen af en gummidug på platecylinderen 15.

Det viste trykværk vil være meget enkelt og let at vedligeholde. Samtidig vil systemet være let at udskifte afhængigt af om trykværket ønskes brugt til det ene eller andet formål. Det vil således være muligt efter ønske at anvende det bestående fugteværk sideløbende med enheden 28 ifølge opfindelsen.

Når enheden 28 benyttes til vandpåføring, vil det på enkel måde være let at justere vandmængden. En sådan justering af vandmængden er vanskelig i traditionelle fugte-

værker, hvor valserne kører synkront med platecylinderen 15. Gummivalsen 32 kan være forsynet med sin egen motor, der drives uafhængig af platecylinderen. Dette skaber mulighed for en differentieret periferihastighed og dermed mulighed for opstemning af større eller mindre mængde vand i det kileformede mellemrum 31, som dannes mellem gummivalsen 32 og platecylinderen 15.

I fig. 4 vises en første udførelsesform for et trykværk 1 ifølge opfindelsen. Fig. 4 adskiller sig fra det i fig. 3 viste trykværk ved, at enheden 28 er ophængt svingbart om en svingakse 33, der forløber parallelt med rotationsakser 34 og 35 for blanketcylinderen 14 og platecylinderen 15. Enheden 28 er vist i en første position 36, hvor rastervalsen 29 er i kontakt med en blød valse 32, som er i indgreb med platecylinderen 15 og en anden position 37, hvor rastervalsen 29 er direkte i indgreb med blanketcylinderen 14. Disse to positioner benyttes henholdsvis til vandpåføring (position 36) og lakpåføring (position 37).

Fig. 5 viser en yderligere udførelsesform for et trykværk ifølge opfindelsen. I dette trykværk er der en samtidig anvendelse af to enheder 28. Enheden 28, som er illustreret til højre i figuren, anvendes til påføring af fugtevand. Enheden 28, der er vist til venstre, anvendes til påføring af lak. Da det er muligt at opdele kammerraklen over dens længde, vil det være muligt at påføre lak i striber, hvor fugteværket ikke påfører fugt. En sådan effekt vil ikke være mulig i traditionelle trykværker. Lakværket og fugteværket, som er illustreret i fig. 5, vil fungere efter samme princip som forklaret ovenfor under henvisning til de foregående figurer. Alternativt kan enheden 28 i venstre side anvendes til overføring af lak og flexografisk farve. Hvis der er dug på blanketcylinderen 14, vil der da trykkes en heldækkende farve, og hvis der placeres en trykplade på blanketcylinderen 14, kan et ønsket flexografisk trykt billede etableres.

# PATENTKRAV

1. Fremgangsmåde til drift af et trykværk i en offsetmaskine, hvorhos trykværket omfatter en kammerrakel, der anvendes til lakpåføring og som fugteværk til vandpåføring , k e n d e t e g n e t ved, at kammerrakelen og en samvirkende valse forskydes mellem en første position for overføring af vand via en platecylinder til en blanketcylinder og en anden position for overføring af lak direkte til blanketcylinderen.

2. Fremgangsmåde ifølge krav 1, k e n d e t e g n e t ved, at forskydningen er en svingning om en akse parallelt med rotationsaksen for plate- og blanketcylinderen.

3. Trykværk til brug ved en fremgangsmåde ifølge krav 1 eller 2 i en offsetmaskine, der omfatter organer til lakpåføring samt organer til vandpåføring, og hvor lakpåføringsorganerne og vandpåføringsorganerne udgøres af en enhed, der omfatter en kammerrakel samt i det mindste en valse til overføring af lak eller vand fra kammerraklen, k e n d e t e g n e t ved, at lak- og vandpåføringsenheden er indrettet forskydeligt mellem en første position for at bringe nævnte mindst ene valse i kontakt med en valse, der er i indgreb med platecylinderen, og en anden position for at bringe nævnte mindst ene valse i direkte kontakt med trykværkets blanketcylinder.

4. Trykværk ifølge krav 3, k e n d e t e g n e t ved, at lakpåføringsorganerne kun omfatter én overføringsvalse i form af en rastervalse, der overfører lak direkte fra kammerraklen til blanketcylinderen.

5. Trykværk ifølge krav 3, k e n d e t e g n e t ved, at påføringsorganerne omfatter overføringsvalser i form af en rastervalse og en gummivalse til overføring af vand fra kammerraklen til platecylinderen og én rastervalse til overføring af lak direkte til blanketcylinderen.

6. Trykværk ifølge et hvilket som helst af kravene 3-5, k e n d e t e g n e t ved, at kammerrakel/overføringsvalse-enheden er monteret svingbart i forhold til platecylin-

deren og blanketcylinderen mellem en af indgrebsstillingerne med platecylinderen og blanketcylinderen.

7. Trykværk ifølge et hvilket som helst af kravene 3-6, k e n d e t e g n e t ved, at enheden er forsynet med koblingsorganer, der er indrettet til at blive forbundet udløseligt med koblingsorganer i offsetmaskinens ramme, fortrinsvis koblingsorganer for en i sig selv kendt renseenhed for platecylinderen.

8. Trykværk ifølge et hvilket som helst af kravene 3-7, k e n d e t e g n e t ved, at overføringsvalsen er drevet af sin egen motor, fortrinsvis via en motor, der er styret af liniesignal fra hovedmaskinen.

9. Trykværk ifølge et hvilket som helst af kravene 3-8, k e n d e t e g n e t ved, at enheden omfattende kammerraklen samt den mindst ene valse er monteret i offsetmaskinen på udskiftelig måde med offsetmaskinens bestående fugteværk.

# SAMMENDRAG

## FREMGANGSMÅDE TIL DRIFT AF ET TRYKVÆRK SAMT TRYKVÆRK TIL OFFSETMASKINE.

Der beskrives et trykværk (1) til brug i en offsetmaskine. Trykværket gør det muligt at få en bredere anvendelse af offsetmaskiner (1). Dette opnås ved, at lakpåføringsorganerne og vandpåføringsorganerne omfatter en enhed (28), der består af en kammerrakel (30) samt mindst en valse (29,32) til overføring af lak eller vand fra kammerraklen (30) til trykværkets platecylinder (15)/blanketcylinder(14). Enheden (28) er indrettet for svingning, så vand overføres til platecylinder, og lak overføres direkte til blanketcylinder.

Fig. 1,3 og 4.

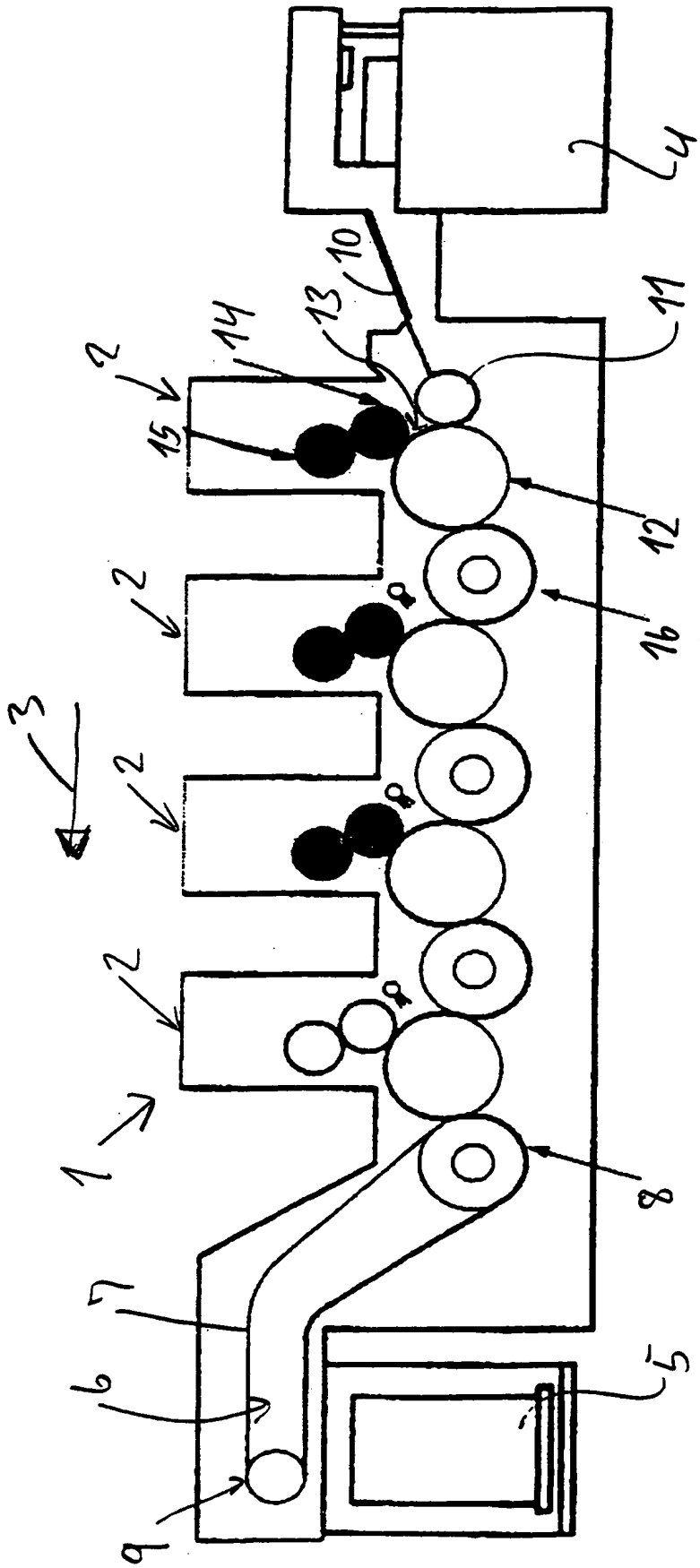



FIG. 1

FIG.2

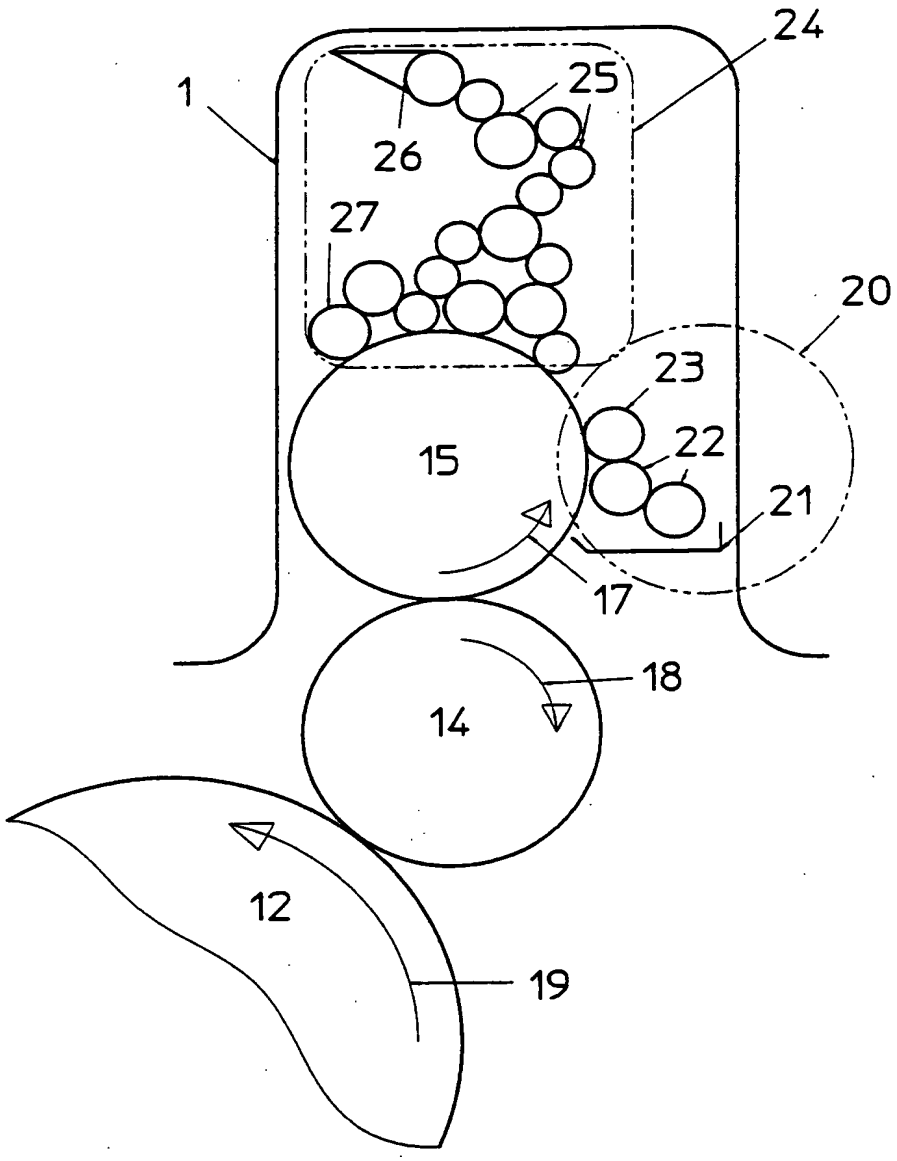


FIG.3

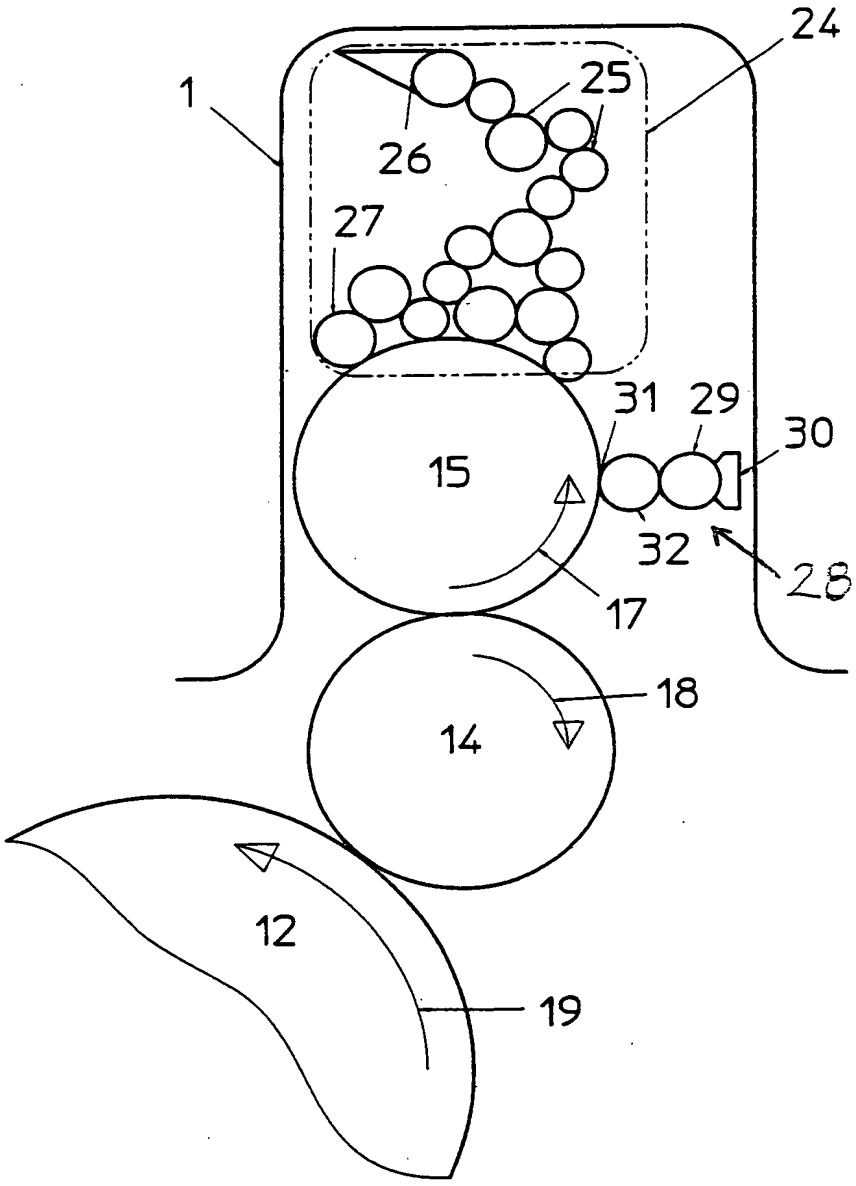


FIG.4

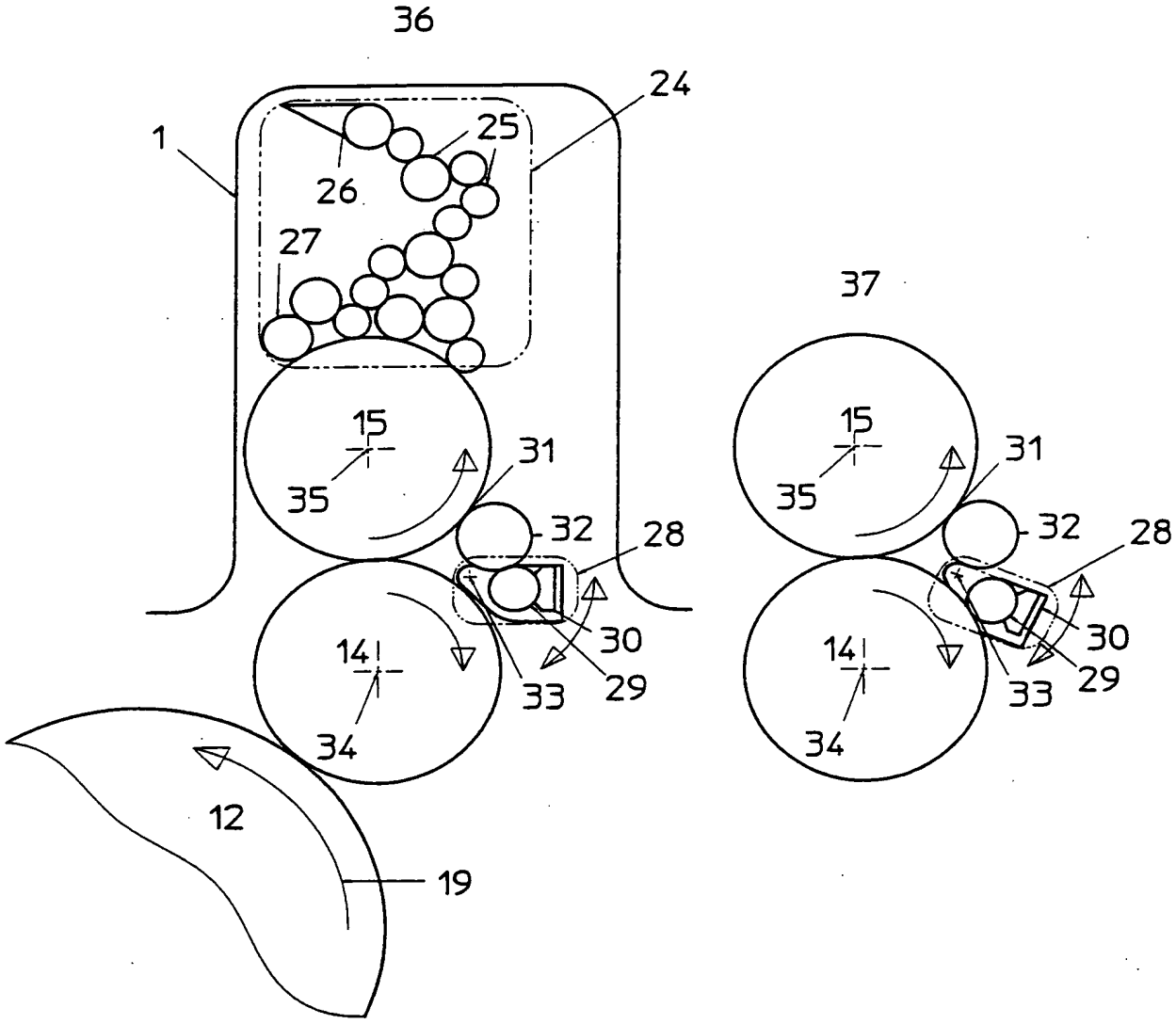
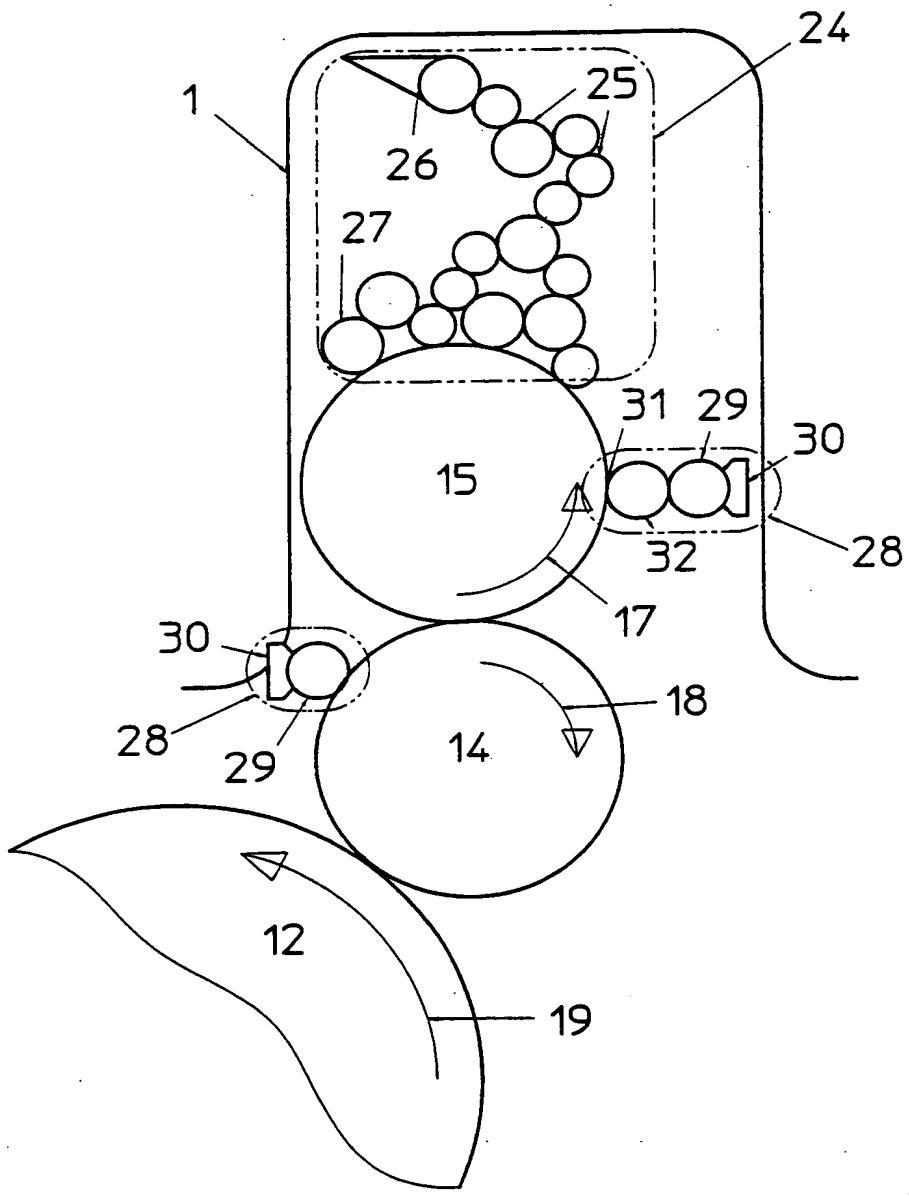


FIG.5



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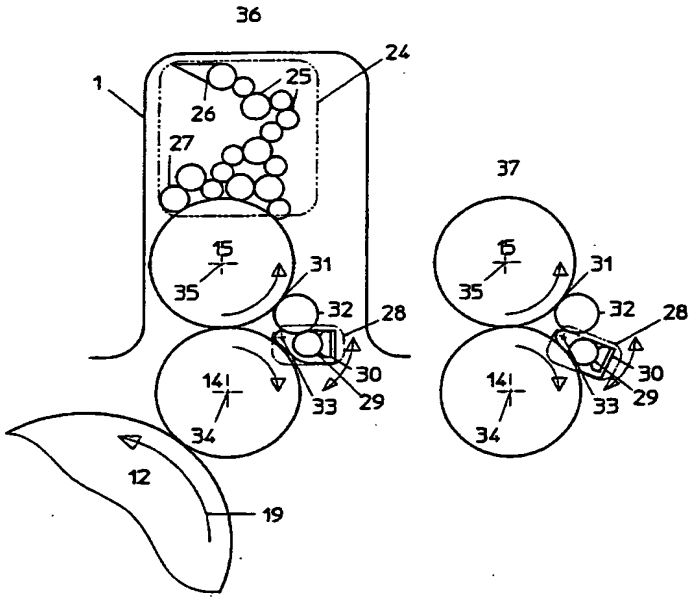
(54) Title: METHOD OF OPERATION OF A PRINTING UNIT AND PRINTING UNIT FOR OFFSET MACHINE




(57) Abstract: There is described a printing unit (1) for use in an offset machine. The printing unit enables wider application of offset machines (1). This is achieved by the coating means and the water application means comprising a unit (28) consisting of a doctor blade (30) and at least one roller (29, 32) for transferring coating or water from the doctor blade (30) to the plate cylinder (15)/blanket cylinder (14) of the printing unit. The unit (28) is arranged for pivoting so that water is transferred to plate cylinder, and coating is transferred directly to the blanket cylinder.

WO 01/25010 A1

**Method of operation of a printing unit and printing unit for offset machine**

**Background of the invention**

The present invention concerns a method for operating a printing unit in which the printing unit comprises a doctor blade used for coating and as moistening unit for applying water, and where the coating means and the water application means are constituted by a unit comprising a doctor blade and at least one roller for transferring coating or water from the doctor blade.

Offset machines are well-known within the art and are therefore only described briefly. A web or a sheet on which printing is to be performed is led around back-pressure rollers or transfer rollers. The web or the sheets are brought into contact with a blanket cylinder for being applied the print to the applied in each single printing unit in the offset machine. The blanket cylinder is in contact with a plate cylinder transferring the colour print to be placed on the web. The plate cylinder is in contact with a moistening unit and a inking unit applying water and ink, respectively. Thus, an offset plate on the plate cylinder is rotated whereby water susceptible parts are moistened by the rollers of the moistening unit. Then the ink susceptible parts of the offset plate are supplied with ink from the ink rollers in the inking unit. The print image formed is then deposited on the blanket cylinder which further prints the ink on the web or the sheet. Preferentially, it will be a paper web but other materials may also be printed.

A printing unit according to the present invention may be used in a traditional offset machine, for example of the kind described in European patent application no. 767,058. The content of this patent application is hereby incorporated by reference as the printing unit may be a part of an offset machine which is built up according to the same principle and with the same paper delivering and paper receiving means at the beginning and the finish of the printing unit as well as corresponding means for transferring paper web or single sheets between different printing units disposed in succession can be used for imparting the web the finished print. Also, the same kinds of printing ink may be used. Offset machines may be equipped with a coating unit. The

coating unit will typically be constructed with a cylinder on which the coating is applied from a roller arrangement which is supplied from a vessel with clear coating.

In International patent application PCT/DK98/00303 there is described a system of the type mentioned in the introduction which is improved and thereby enables a broader application and more efficient operation of printing units in offset machines, where the printing unit may be used for coating and water application. In this system, the coating is established indirectly via the plate cylinder. However, it is desirable to apply coating directly on the blanket cylinder due to quality and finish in the formed print.

It is the object of the present invention to indicate a method for operating a printing unit and a printing unit for an offset machine which enables a wider use and a more efficient operation of printing units in existing and new offset machines. Furthermore, it is an object to indicate a moistening unit which simultaneously may be used for coating and which also enables flexoprinting in an offset machine.

According to the present invention this is achieved by a method which is peculiar in that the doctor blade and an interacting roller are displaced between a first position for transferring water via a plate cylinder to a blanket cylinder and a second position for transferring coating directly to the blanket cylinder.

The printing unit for use by the method is peculiar in that the coating and water application unit is arranged slidable between a first position for bringing said at least one roller in contact with a roller engaging the plate cylinder, and a second position for bringing said at least one roller in direct contact with the blanket cylinder of the printing unit.

By using such a method and such a unit it becomes possible to make offset machines so that they obtain wider application, and simultaneously the process may run more efficiently as the coat is not applied indirectly via the plate cylinder to the blanket cylinder. The slidable unit may be designed so that it may be retrofitted on existing offset machines.

Coating or water from the chamber is transferred to the blanket cylinder or the plate cylinder via a roller which preferably is a screen roller in the form of an Anilox roller, and the liquid lying in the cups of the screen roller is transferred to the blanket or plate cylinder. Transfer of water to the plate cylinder occurs as a rubber roller is inserted between the screen roller and the printing plate of the plate cylinder. Transfer of coating occurs directly to the blanket cylinder from the screen roller.

When the transfer unit is displaced to its second position for contact with the blanket roller, it is also possible to run flexographic printing. The blanket cylinder is provided with a printing plate, and the plate cylinder is displaced out of contact with the blanket cylinder. Then flexo inks may be transferred from the chamber and the transfer roller in the shape of an Anilox roller to the printing plate.

If a completely covering print is desired, a blanket may be used on the blanket cylinder as in the case of coating.

It will be possible to use separate doctor blades for inking/coating and water application. However, it will also be possible to use one and the same doctor blade for coating and water application.

In a coating unit, which typically is the last printing unit in an offset machine, it is advantageous that the coating means only comprise one screen roller in the form of an Anilox roller for transferring the coating which is applied directly form the doctor blade to the blanket cylinder.

Most machines will be provided with a frame with coupling means for supporting a cleaning system consisting of a liquid spray nozzle and cleaning paper. In some cases the printing unit according to the invention may be mounted in coupling means of this frame. Hereby, the need for special adaptation of the machine frame is avoided. Hereby it becomes particularly simple to modify an existing machine as the coupling

means located in the frame of the offset machine are re-used as coupling means for the unit according to the invention.

The motor used for driving the screen roller is independent in order to adjust the rotational speed to different offset machines. Thus the unit does not need a special adaptation of the drive of the screen roller for different offset machines. In the machine, there will only be need for a suspension which in its most simple form consists of four pegs or screws on a rack.

By using a unit according to the invention, which is based on a doctor blade, it will be possible to apply highly pigmented inks, as for example metal enamels. This will not be possible with common offset printing units as pigments/inks will clog here and make impossible the formation of a quality print.

The unit according to the invention may also be use as a moistening unit. In the known moistening units, an environmental problem arises. In order to transfer the moistening water with the present roller arrangement, it is necessary to add solvents. At the moment, this has been prohibited at several places.

Alternatively, it has been attempted to solve the problem by teflon coating for forming a kind of mask with the purpose of avoiding ink depositing in certain areas. This is known as dry offset and is a different process in principle. Thus teflon has been used for substituting the water application from the moistening rollers. This system has an advantage as the paper is not moistened and thereby the risk that coating adheres badly do not arise.

Instead of using the traditional moistening units, there may be used a system which comprises a doctor blade and a screen roller and a rubber roller between the doctor blade and the plate cylinder as described in the above International patent application. This is advantageous as faster operation than previously is feasible. The amount of water or water sausage formed in a wedge-shaped interspace between the rubber roller and the plate cylinder may be varied by running with varied speed between the rubber

roller and the plate cylinder. By running the rubber roller with greater speed it is thus possible to provide a greater amount of water in the wedge. The amount of water may also be adjusted by varying the slot width occurring between the rubber roller and the plate cylinder. The printing unit according to the invention is thus advantageous in that the amount of water situated in the slot may be varied according to need.

As printing unit may be intended for coating and as moistening unit, it will be possible to use the same unit consisting of a doctor blade and transfer roller for both water and coating.

By using a common moistening unit it will not be possible to apply coating. Due to the surface speeds, a great and unallowable contamination of the surroundings will occur as coating will be sprayed from the periphery of the roller and from the ends of the rollers. By using the unit according to the invention for coating, it will be possible to avoid contamination.

It is also possible that, together with a plate cylinder and a blanket cylinder, there may be provided two units according to the invention of which one unit is used for coating and the other for water application. Hereby it becomes possible to provide stripes of coating and stripes of ink side by side on the plate cylinder. This is made possible as the doctor blade may be divided up for giving off liquid/ink over a part of their length. Hereby is thus achieved the possibility of making print with quite new effects.

**Description of the drawing**

In the following, the invention will now be explained with reference to the accompanying schematic drawing, where:

Fig. 1 shows a side view of a typical offset machine comprising four printing units,

Fig. 2 shows a partial view for illustrating a known printing unit comprising a moistening unit and an inking unit,

Fig. 3 shows a view corresponding to Fig. 2 for illustrating an embodiment of a printing unit according to the above International patent application,

Fig. 4 shows a view corresponding to Fig. 3 for illustrating a first embodiment of a printing unit according to the invention, and

Fig. 5 shows a view for illustrating a further embodiment of a printing unit according to the invention.

Fig. 1 shows a traditional offset printing machine 1 comprising four printing units 2. The machine has a transport direction 3 for sheets that are printed. The sheets comes from a delivery station 4 and are conveyed to a receiving station 5 by means of a delivery arrangement 6 comprising a conveyor belt 7. The conveyor belt 7 runs about two chain wheels 8,9. The single sheets are conveyed from the unit 4 via a path 10 around an impression cylinder or back-pressure cylinder 12. The single sheets are placed at a position indicated by 13. The sheets are thus placed in an area between a blanket cylinder 14 and the impression cylinder 12. The blanket cylinder 14 is in contact with a plate cylinder 15. Besides the impression cylinder 12, the offset machine also comprises transfer cylinders 16 for the sheets.

The offset machine furthermore comprises gripping means for holding sheets and a long row of rollers for moistening units and inking units which are in connection with the plate cylinder. Since these are well-known, they are not shown in Fig. 1 which serves as illustration of the structure of the offset unit. These rollers, however, appear in Fig. 2.

Fig. 2 shows a printing unit 1 comprising an impression cylinder 12, a blanket cylinder 14 and a plate cylinder 15. These cylinders are rotating according to the arrows 17,18, 19. A moistening unit comprises a container 21 for water. From the water container 21 the water is led via a system of rollers 22 to the last contact roller 23 which is in contact with the plate cylinder 15. The printing unit 1 furthermore comprises an inking unit 24 comprising a number of rollers 25 transferring ink from an ink container 26 to contact rollers 27 which apply the ink on a soft printing plate (not shown) situated on the plate cylinder 15. The printing plate located on the plate cylinder will thus be imparted ink in the areas where water has not been applied from the moistening unit 20. The printing plate is usually an etched metal plate.

As a coating unit is built up in principle as the moistening unit 20, Fig. 2 may also be said to illustrate a coating unit. The coating will thus be conveyed up from the container 21 containing coating and transferred via rollers 22 to the last contact roller 23 which is also called the forming roller. However, a coating unit will preferably be mounted on the blanket cylinder 14 for avoiding undesired dirtying.

The embodiment shown have some environmental and printing disadvantages. Instead of using the existing moistening unit, the printing unit in Fig. 2 may be modified as illustrated in Fig. 3.

In Fig. 3 the contact roller 23 is substituted by a unit 28 comprising a doctor blade system 30 and a screen roller 29, preferably an Anilox roller of the kind also used for flexographic printing. The screen roller 29 may be mounted directly in the existing suspension. Between the screen roller 29 and the plate cylinder 15 there is mounted a soft roller 32, preferably a rubber roller. The unit 28 may, even by great peripheral speeds, ensure a constant and uniform amount of water and/or coating transferred to the plate cylinder 15. If the unit 28 is desired to be used for coating, the rollers 27 of the inking unit are brought out of contact with the plate cylinder 15. If the unit 28 is used for water application, the inking unit 24 is kept in engagement with the plate cylinder 15.

The embodiment shown in Fig. 3 may be changed when it is only used for coating. Thus the hard screen roller 29 may be used directly without a soft roller for coating. This will, however, necessitate the use of a rubber blanket on the plate cylinder 15.

The printing unit shown will be very simple and easy to maintain. At the same time, the system is easy to replace depending on whether the printing unit is desired to be used for one or the other purpose. Thus it will be possible, according to wish, to use the existing moistening unit concurrently with the unit 28 according to the invention.

When the unit 28 is used for water application, it will be easy to adjust the water amount in a simple way. Such an adjustment is difficult in traditional moistening units where the rollers are running synchronously with the plate cylinder 15. The rubber roller 32 may be provided with its own motor which is driven independently of the plate cylinder. This creates possibility of a differentiated periphery speed and thereby possibility of stemming up of greater or lesser amount of water in the wedge-shaped interspace 31 formed between the rubber roller 32 and the plate cylinder 15.

In Fig. 4 is shown a first embodiment of a printing unit 1 according to the invention. Fig. 4 differs from the printing unit shown in Fig. 3 by the unit 28 being suspended pivotably about an axis 33 of pivot running in parallel with axes of rotation 34 and 35 for the blanket cylinder 14 and the plate cylinder 15. The unit 28 is shown in a first position 36, where the screen roller 29 is in contact with a soft roller 32 engaging the plate cylinder 15, and a second position 37 where the screen roller 29 is directly engaging the blanket cylinder 14. These two positions are used for water application (position 36) and coating (position 37), respectively.

Fig. 5 shows a further embodiment of a printing unit according to the invention. In this printing unit there is simultaneous use of two units 28. The unit 28 illustrated to the right in the Figure is used for applying moistening water. The unit 28 shown to the left is used for applying coating. Since it is possible to divide up the doctor blade over its length, it will be possible to apply coating in stripes where the moistening unit does not apply any moisture. Such an effect will not be possible in traditional printing units. The coating unit and the moistening unit as illustrated in Fig. 5 will function according to the same principle as explained above with reference to the preceding Figures. Alternatively, the unit 28 in the left side may be used for transferring coating and flexographic ink. If there is a blanket on the blanket cylinder 14, a completely covering ink will be printed, and if a printing plate is placed on the blanket cylinder 14, a desired flexographically printed image may be established.

# CLAIMS

1. A method for operating a printing unit in an offset machine in which the printing unit comprises a doctor blade used for coating and as moistening unit for applying water, c h a r a c t e r i s e d in that the doctor blade and an interacting roller are displaced between a first position for transferring water via a plate cylinder to a blanket cylinder and a second position for transferring coating directly to the blanket cylinder.

2. A method according to claim 1, c h a r a c t e r i s e d in that the displacement is a pivoting about an axis in parallel with the rotational axis of the plate and blanket cylinder.

3. A printing unit for use in a method according to claim 1 or 2 in an offset machine, comprising means for coating and means for applying water, and where the coating means and the water application means are constituted by a unit comprising a doctor blade and at least one roller for transferring coating or water from the doctor blade, c h a r a c t e r i s e d in that the coating and water application unit is arranged slidable between a first position for bringing said at least one roller in contact with a roller engaging the plate cylinder, and a second position for bringing said at least one roller in direct contact with the blanket cylinder of the printing unit.

4. A printing unit according to claim 3, c h a r a c t e r i s e d in that the coating means only comprises one transfer roller in the shape of a screen roller transferring coating directly from the doctor blade to the blanket cylinder.

5. A printing unit according to claim 3, c h a r a c t e r i s e d in that the coating means comprises transfer rollers in the form of a screen roller and a rubber roller for transferring water from the doctor blade to the plate cylinder and one screen roller for transferring coating directly to the blanket cylinder.

6. A printing unit according to any of claims 3-5, c h a r a c t e r i s e d in that the doctor blade/transfer roller unit is mounted pivotably in relation to the plate cylinder and the blanket cylinder between one of the engagement positions with the plate cylinder and the blanket cylinder.

7. A printing unit according to any of claims 3-6, c h a r a c t e r i s e d in that the unit is provided with coupling means which are arranged for being connected releasably with coupling means in the frame of the offset machine, preferably coupling means for a cleaning unit known per se for the plate cylinder.

8. A printing unit according to any of claims 3-7, c h a r a c t e r i s e d in that the transfer roller is driven by its own motor, preferably via a motor controlled by a line signal from the main machine.

9. A printing unit according to any of claims 3-8, c h a r a c t e r i s e d in that the unit comprising the doctor blade and the at least one roller is mounted in the offset machine in an exchangeable way with the existing moistening unit of the offset machine.

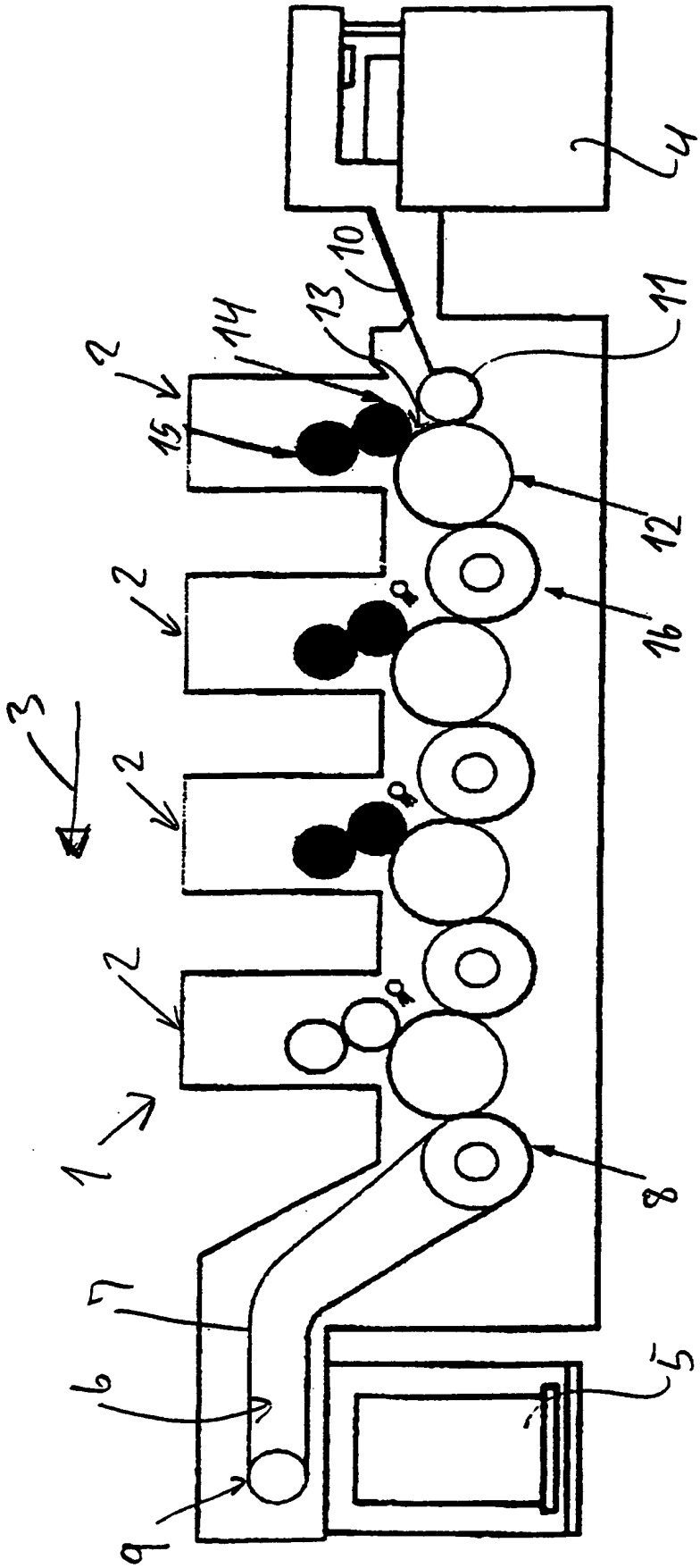



FIG. 1

FIG.2

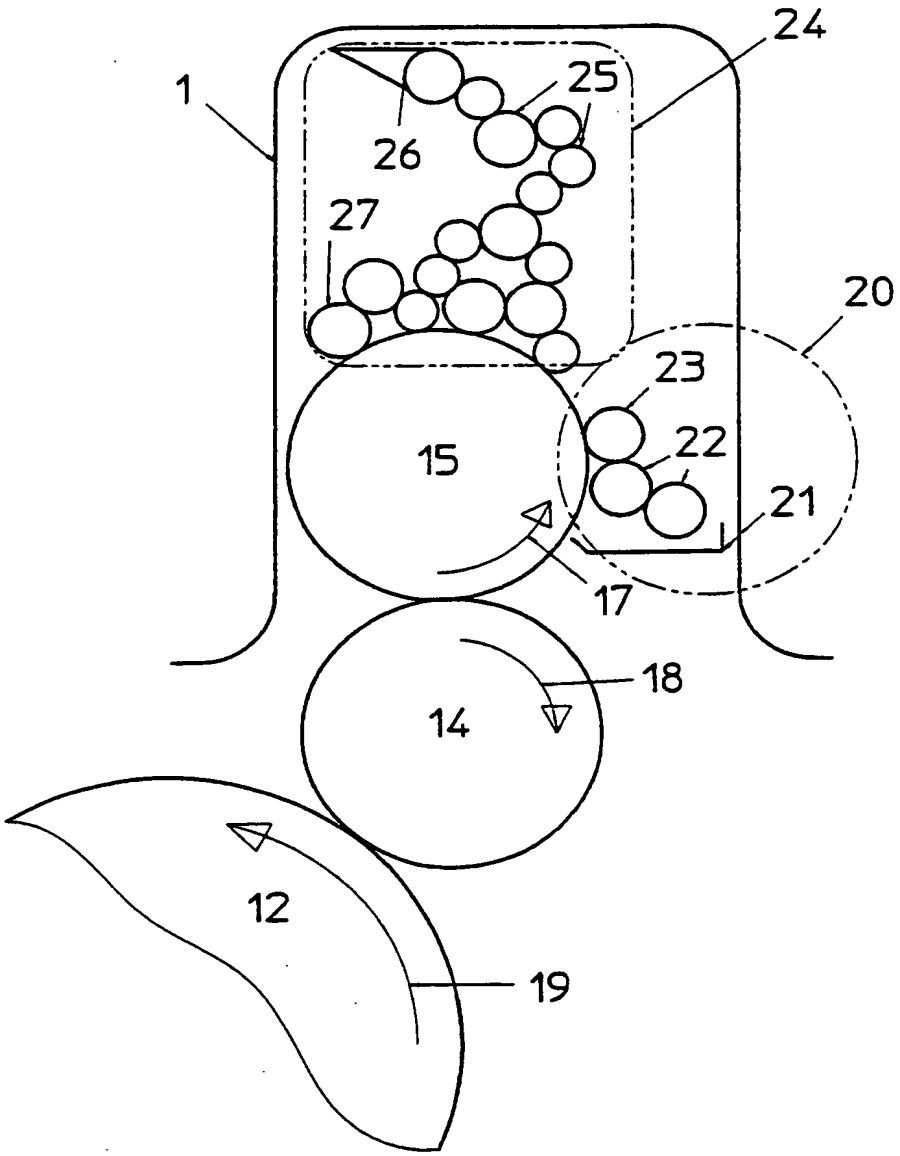


FIG.3

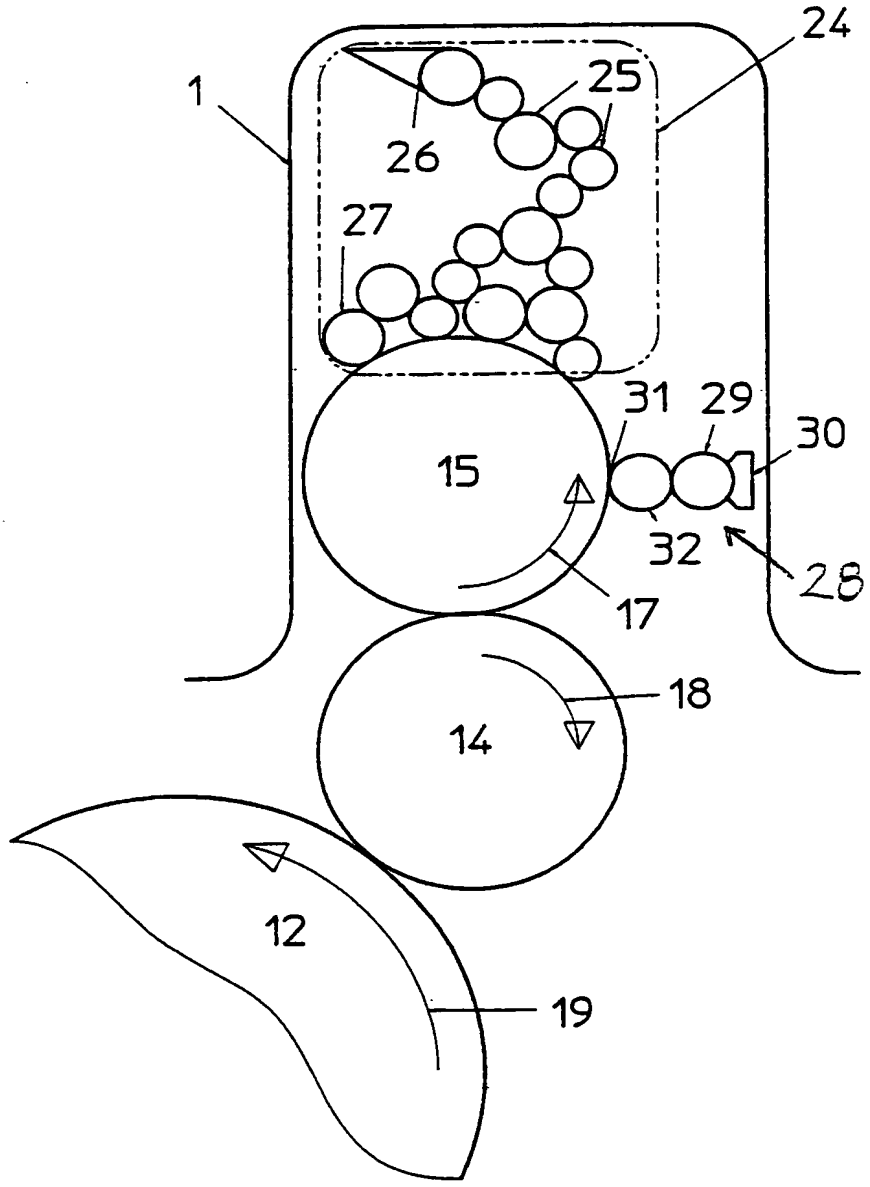


FIG.4

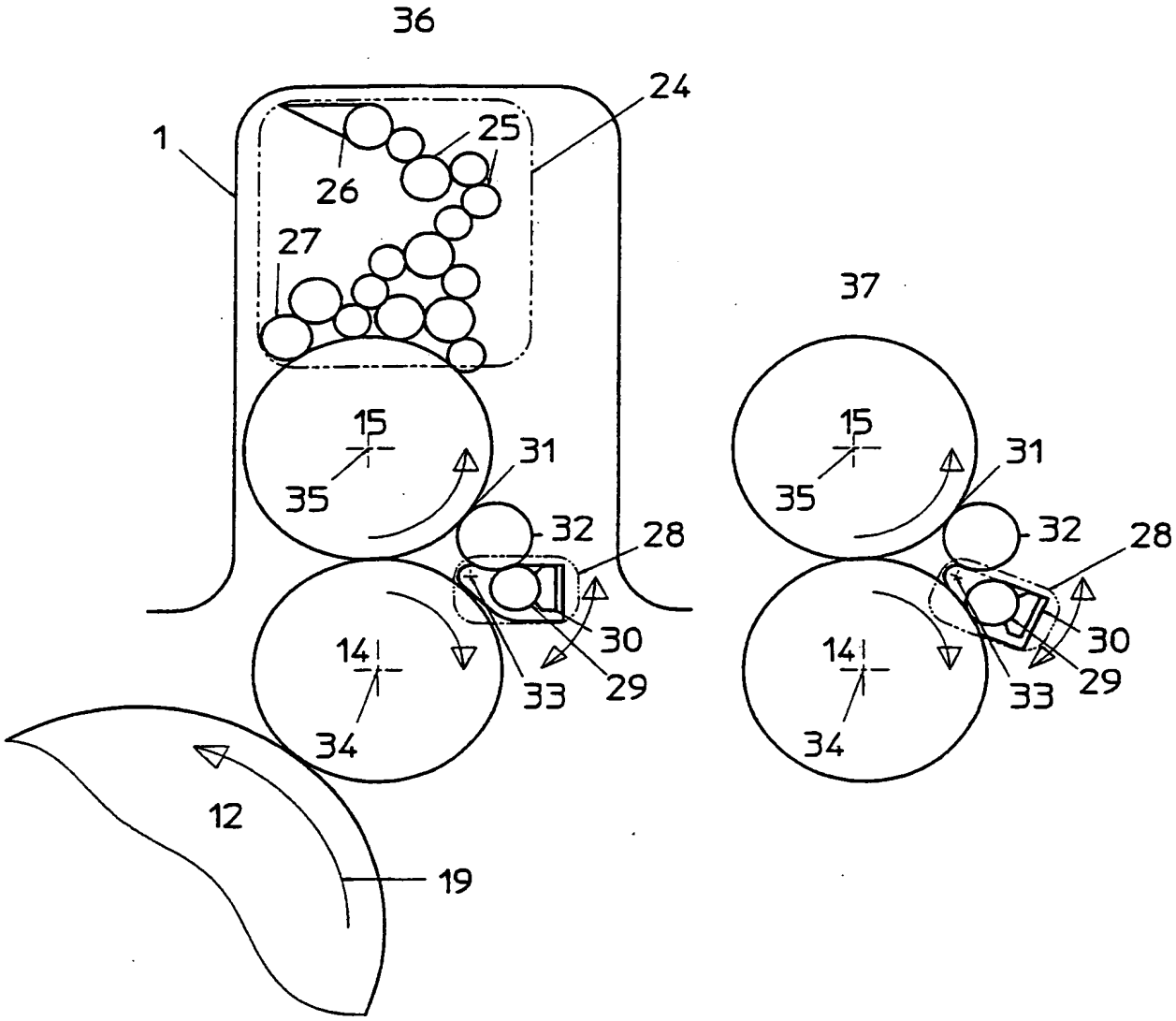

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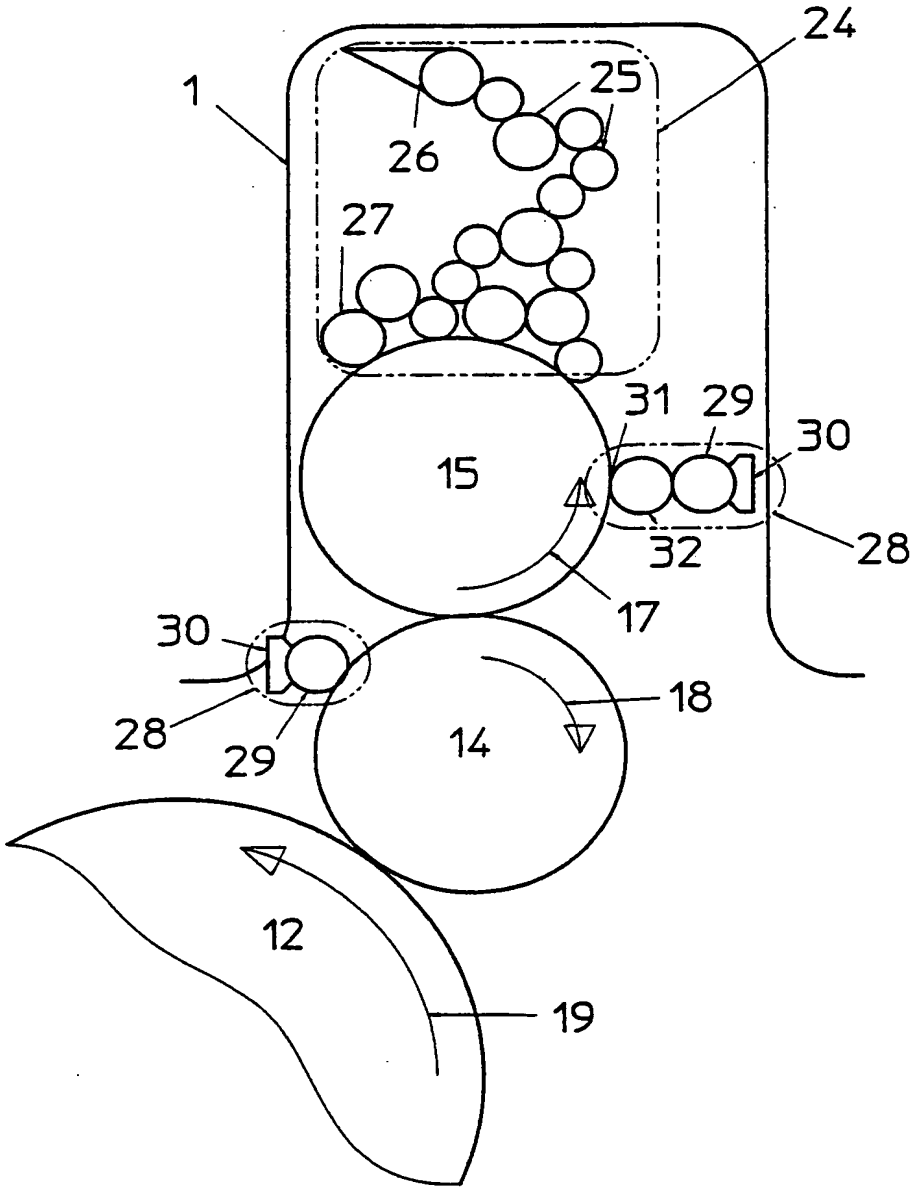
FIG.5



# INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 00/00542

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B41F 7/26, B41F 23/08
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B41F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| Y | DE 3500437 A1 (VEB KOMBINAT POLYGRAPH"WERNER LAMBERZ"), 17 October 1985 (17.10.85), page 5, line 9 - page 6, line 18, figure<br>-- | 1-9 |
| Y | GB 2119711 A (VEB KOMBINAT POLYGRAPH"WERNER LAMBERZ"), 23 November 1983 (23.11.83), page 1, line 59 - line 129, figures 1-2<br>-- | 1-9 |
| A | GB 2327205 A (MAN ROLAND DRUCKKMASCHINEN AKTIENGESELLSCHAFT), 20 January 1999 (20.01.99), page 3 - page 10, figures<br>-- | 1-9 |

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 9 January 2001 | 15-01-2001 |
| Name and mailing address of the ISA/<br>Swedish Patent Office<br>Box 5055, S-102 42 STOCKHOLM<br>Facsimile No. +46 8 666 02 86 | Authorized officer<br>Teija Kurki / MRo<br>Telephone No. +46 8 782 25 00 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 00/00542

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | GB 2184982 A (LUIGI GHISALBERTI), 8 July 1987 (08.07.87), the whole document | 1-9 |
| A | US 4567823 A (P. HUMMEL ET AL), 4 February 1986 (04.02.86), abstract, figures | 1-3,6-9 |
| A | DE 3941571 A1 (VEB KOMBINAT POLYGRAPH"WERNER LAMBERZ"), 28 June 1990 (28.06.90), abstract, figures | 1-9 |
| A | DE 19729985 A1 (MAN ROLAND DRUCKMASCHINEN AG), 14 January 1999 (14.01.99), figure 1, abstract | 1-9 |
| P,A | US 5960713 A (H.W. DEMOORE ET AL), 5 October 1999 (05.10.99) | 1-9 |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

04/12/00

International application No.
PCT/DK 00/00542

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| DE 3500437 A1 | 17/10/85 | DD 223117 A | 05/06/85 |
| GB 2119711 A | 23/11/83 | DD 207358 A,B | 29/02/84 |
| | | DE 3305983 A,C | 10/11/83 |
| | | FR 2526369 A,B | 10/11/83 |
| | | GB 8311654 D | 00/00/00 |
| | | JP 58191163 A | 08/11/83 |
| GB 2327205 A | 20/01/99 | DE 19729977 A | 14/01/99 |
| | | FR 2765829 A,B | 15/01/99 |
| | | GB 9815186 D | 00/00/00 |
| GB 2184982 A | 08/07/87 | DE 3641213 A,C | 11/06/87 |
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| | | IT 1214887 B | 18/01/90 |
| | | IT 8502920 D | 00/00/00 |
| US 4567823 A | 04/02/86 | DE 3221514 A,C | 02/02/84 |
| | | GB 2127743 A,B | 18/04/84 |
| | | GB 8315647 D | 00/00/00 |
| | | JP 59057758 A | 03/04/84 |
| DE 3941571 A1 | 28/06/90 | DD 278551 A | 09/05/90 |
| DE 19729985 A1 | 14/01/99 | GB 2327196 A,B | 20/01/99 |
| | | GB 9815180 D | 00/00/00 |
| US 5960713 A | 05/10/99 | CA 2175731 A | 05/11/96 |
| | | EP 0741025 A | 06/11/96 |
| | | EP 1029671 A | 23/08/00 |
| | | JP 2888794 B | 10/05/99 |
| | | JP 8336954 A | 24/12/96 |
| | | US 6116158 A | 12/09/00 |
| | | EP 0767058 A | 09/04/97 |
| | | JP 9136398 A | 27/05/97 |

# PATENT COOPERATION TREATY

# PCT



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| Applicant's or agent's file reference | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
|---|---|---|
| P9737PC00/LN/dh | | |
| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
| PCT/DK00/00542 | 29/09/2000 | 01/10/1999 |
| International Patent Classification (IPC) or national classification and IPC<br>B41F7/26 | | |
| Applicant<br>TRESU PRODUCTION A/S et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☒ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

| Date of submission of the demand | Date of completion of this report |
|---|---|
| 12/04/2001 | 12.10.2001 |
| Name and mailing address of the international preliminary examining authority:<br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized officer<br>Fox, T<br>Telephone No. +49 89 2399 2797 |

Form PCT/IPEA/409 (cover sheet) (January 1994)

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK00/00542

## I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
**Description, pages:**

| | |
|---|---|
| 1-8 | as originally filed |

**Claims, No.:**

| | |
|---|---|
| 1-9 | as originally filed |

**Drawings, sheets:**

| | |
|---|---|
| 1/5-5/5 | as originally filed |

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   - ☐ the description, pages:
   - ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   *(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Yes: | Claims | 1-8 |
| | No: | Claims | |
| Inventive step (IS) | Yes: | Claims | 1-8 |
| | No: | Claims | |
| Industrial applicability (IA) | Yes: | Claims | 1-8 |
| | No: | Claims | |

2. Citations and explanations
   **see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
**see separate sheet**

V. The **closest prior art** is known from document GB-A-2 119 711 (D1). Documents D1 discloses a stationary fountain comprising a doctor blade cooperating with a ductor. A lacquer roller is displaceable between a first position for transferring water via a plate cylinder and a second position for transferring coating directly to the blanket cylinder. The method according to claim 1 differs from the one according to D1 in that the doctor blade is displaced together with the interacting roller. The apparatus according to claim 3 differs from the one according to D1 in that the whole unit comprising the doctor blade together with the roller is slidable between the two positions as defined in the characterising portion of claim 3.
The claimed apparatus is therefore new in the sense of Article 33(2) PCT.
The **object** of the present invention is to simplify a fountain which can apply either water to a plate cylinder or a coating to a blanket cylinder.
These **objects are achieved** by displacing the unit as a whole so that e.g. the coating can be applied directly from the roller of the fountain to the blanket cylinder. Document DE-A-35 00 437 (D2) disclose an apparatus with a mechanism for disengaging a roller from a roller group, so that no further liquid is transferred from the fountain to the plate cylinder. Neither D2 nor any other document cited gives a hint to displace the interacting roller together with the doctor blade or the whole unit between the two positions as defined in the characterising portion of claims 1 and 3 respectively.
The claimed apparatus involves therefore an inventive step in the sense of Article 33(3) PCT.

VII. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.
Although claim 1 is drafted in the two-part form, the feature that the interacting roller is displaced between two positions in the characterising portion is disclosed in document D1 in combination with the features disclosed in the preamble. This feature should be transferred from the characterising portion of the claim to the preamble (Rule 6.3 (b) PCT).

VIII. The application does not meet the requirements of Article 6 PCT, because claim 6 is not clear.

According to claim 3 the coating and water application unit is **slidable** between two positions. According to claim 6 the unit is **pivotable** between two positions. However according to the description the unit is either slidable mounted or pivotable mounted. No support can be found for a construction which is slidable **and** pivotable. Claim 6 should therefore be reformulated as an independent claim.

The term "The content of .... herby incorporated by reference " on page 1 line 25 should be deleted, because the knowledge of the content of document EP-A-0 767 058 is not essential for carrying out the invention (see Guidelines C-II-4.17).